

**REMARKS**

Claims 1-5, 9, 11-15, 18-23, and 27 remain in the present application. Claims 6-8, 10, 16-17, and 24-26 are hereby cancelled without prejudice. Claims 1, 4, 5, 9, 12, 20, 22, and 23 are hereby amended. No new matter is being added.

**Claims Rejections**

Claims 1-5, 9, 11-15, 18-23, and 27 stand rejected under 35 USC 103(e) as being unpatentable over Yin et al (USP 6,844,550) in view of Chang et al ("Multiple electron-Beam Lithography"). Applicant respectfully traverses this rejection with respect to the claims as now amended.

Claim 1, as amended, now recites as follows.

1. (currently amended) A method for inspecting portion of a substrate to be inspected, the method comprising:
  - generation of N multi-pixel incident electron beams;
  - directing the N multi-pixel incident electron beams through N beam separators in a first direction;**
  - focusing the N multi-pixel incident electron beams onto N areas of the substrate;
  - directing electrons emitted from the N areas through the N beam separators in a second direction so as to separate the emitted electrons from the incident beams;**
  - detecting the emitted electrons using N multi-pixel detector arrays in a parallel manner; and
  - translation of the substrate in a path that covers approximately 1/N of the portion of the substrate to be inspected.

(Emphasis added.)

As recited in amended claim 1, the claimed method requires (i) **directing the incident electron beams through N beam separators in a first direction** and (ii) **directing emitted electrons through N beam separators in a second**

**direction.** In other words, the N beam separators are configured so as to **separate the emitted electrons from the incident electron beams.**

The N beam separators 506 are shown, for example, in FIGS. 5A and 5B of the present application (where N=2 and N=4, respectively) and are described in relation thereto. For example, page 6, lines 16-23 of the present application recites as follows regarding the incident beams traveling through the beam separators in FIG. 5A.

The two multi-pixel incident beams (504a and 504b) travel through two beam separator devices (506a and 506b, respectively). These two beam separators (506a and 506b) separate the two incident beams (504a and 504b, respectively) from the two scattered beams (510a and 510b, respectively). Each beam separator may comprise, for instance, a magnetic beam separator that bends the incident beam to be directed along the optical axis to the normal of the surface to be inspected. Alternatively, other types of beam separators may be used, for example, those in a prism type configuration.

And page 7, lines 21-25 of the present application recites as follows regarding the scattered electron beams traveling though the beam separators in FIG. 5A.

Subsequently, the two scattered electron beams (510a and 510b) travel from the two objective lenses (508a and 508b, respectively) to the two beam separators (506a and 506b, respectively). The two beam separators (506a and 506b) redirect the two scattered electron beams (510a and 510b, respectively) to two corresponding multi-pixel detection systems. Each multi-pixel detection system may be implemented, for example, with a charged-coupled device (CCD) array or other type of detector array.

**Hence, the beam separators separate the scattered electron beams (i.e. the emitted electrons) from the incident beams. This separation enables the scattered electron beams to be resolved using the multi-pixel detector arrays.**

Like the claimed method, Yin discloses multiple incident electron beams. However, in contrast to the claimed invention, Yin et al does **not** disclose or suggest the use of **beam separators** to separate the emitted electrons from the incident electron beams. FIG. 2 of Yin et al, reproduced below for convenience, illustrates the column configuration disclosed therein.

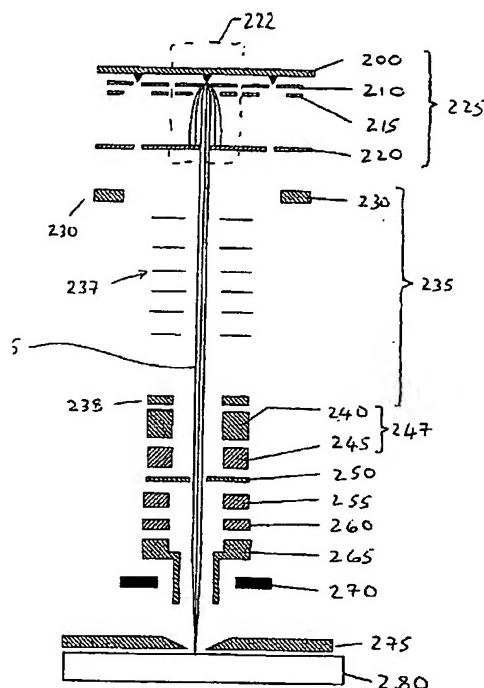


Figure 2.

As shown above, the claimed beam separators are **not** disclosed or suggested by Yin et al. In accordance with the claimed invention, such beam separators are used to enable the parallel detection of multiple pixels per beam.

Chang et al. also discloses multiple incident electron beams. However, in contrast to the claimed invention, Chang et al does **not** disclose or suggest the use of **beam separators** to separate the emitted electrons from the incident electron beams. FIG. 2 of Chang et al, reproduced below for convenience, illustrates the microcolumn configurations disclosed therein.

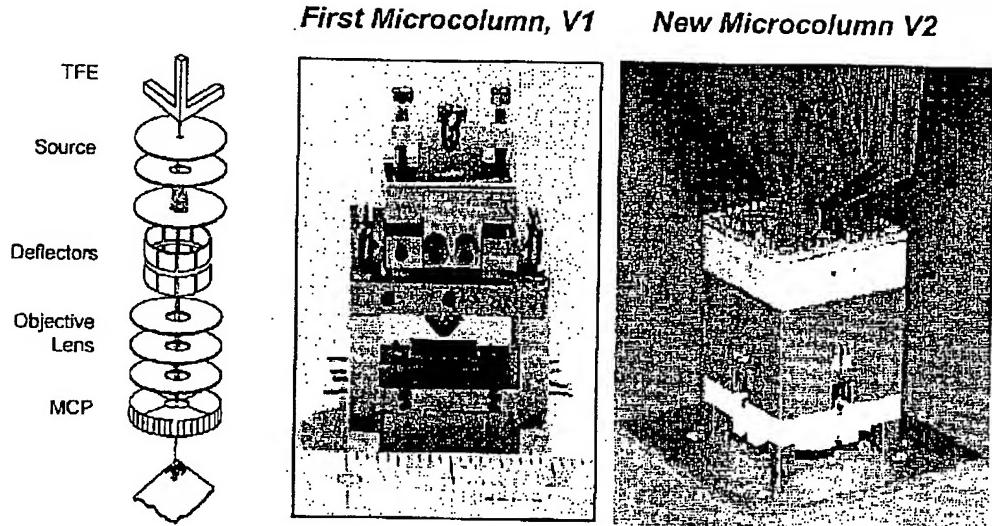


Figure 2. Comparison of previous V1 microcolumn and the new V2 microcolumn, which is designed for arrayed operation. V2 also offers significant advantages in packaging and shielding to minimize crosstalk.

As seen from the above FIG. 2, the claimed beam separators are **not** disclosed or suggested in the microcolumn configurations of Chang et al. In accordance with the claimed invention, such beam separators are used to enable the parallel detection of multiple pixels per beam.

Therefore, neither Yin et al, nor Chang et al, nor the combination thereof disclose or suggest the claimed invention in amended claim 1.

Claims 2-5 depend from claim 1. As such, claims 2-5 are patentable over the cited references for at least the same reasons as discussed above in relation to claim 1.

Claim 9 is amended and now recites a method including "bending said emitted beams towards a plurality of multi-pixel detector arrays so as to **separate said emitted electrons from the incident beams.**" (Emphasis added.) As such, claim 9 also requires beam separation so as to enable resolution of the emitted electrons by the multi-pixel detector arrays. As such, claim 9 is

patentable over the cited references for at least the same reasons as discussed above in relation to claim 1.

Claims 11-15 and 18-19 depend from claim 9. As such, claims 11-15 and 18-19 are patentable over the cited references for at least the same reasons as discussed above in relation to claim 9.

Claim 20 is amended and now recites an inspector apparatus including first and second beam separators and first and second multiple-pixel electron detectors. As such, claim 20 also requires beam separators so as to enable resolution of the emitted electrons by the multi-pixel detector arrays. As such, claim 20 is patentable over the cited references for at least the same reasons as discussed above in relation to claim 1.

Claims 21-23 and 27 depend from claim 20. As such, claims 21-23 and 27 are patentable over the cited references for at least the same reasons as discussed above in relation to claim 20.

Claims 7-8, 16-17, and 24-26 are hereby canceled without prejudice. As such, the rejection of those claims is now moot.

Docket No. 10011.001210 (P0980)  
Amendment and Response to Office Action  
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Conclusion

Applicants respectfully submit that claims 1-5, 9, 11-15, 18-23, and 27, as amended, are now in patentable form. Favorable action is respectfully requested.

Respectfully submitted,  
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